

## EAST Search History

## EAST Search History (Prior Art)

| Ref # | Hits   | Search Query   | DBs  | Default Operator | Plurals | Time Stamp          |
|-------|--------|--|--|------------------|---------|---------------------|
| S1    | 308715 | "257"/((13,79-103,918).<br>ccls.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR               | ON      | 2008/01/05<br>14:52 |
| S2    | 0      | ("LED" or "light<br>emitting") and ((P+ or n<br>+) with (Gan or<br>"gallium nitride")) and<br>((p or n) adj (Gan or<br>"gallium nitride")) and<br>((transparent) adj<br>(electrode or conduct<br>\$3)) and ((Ga or<br>gallium) adj (layer))<br>and ((al or aluminum)<br>adj (layer)) and ((Au or<br>gold) adj (layer)) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR               | ON      | 2008/01/05<br>15:04 |
| S3    | 1      | ("LED" or "light<br>emitting") and ((P or n)<br>with (Gan or "gallium<br>nitride")) and ((p or n)<br>adj (Gan or "gallium<br>nitride")) and<br>((transparent) adj<br>(electrode or conduct<br>\$3)) and ((Ga or<br>gallium) adj (layer))<br>and ((al or aluminum)<br>adj (layer)) and ((Au or<br>gold) adj (layer))    | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR               | ON      | 2008/01/05<br>15:04 |
| S4    | 5      | ("LED" or "light<br>emitting") and ((P or n)<br>with (Gan or "gallium<br>nitride")) and ((p or n)<br>adj (Gan or "gallium<br>nitride")) and<br>((transparent) adj<br>(electrode or conduct<br>\$3)) and ((Ga or<br>gallium) adj (layer))<br>and (al or aluminum)<br>and (Au or gold)                                   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR               | ON      | 2008/01/05<br>15:07 |

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| S5  | 0   | S4 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:08 |
| S6  | 26  | ("LED" or "light emitting") and ((P or n) and (Gan or "gallium nitride")) and ((transparent) adj (electrode or conduct \$3)) and ((Ga or gallium) adj (layer)) and (al or aluminum) and (Au or gold) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:10 |
| S7  | 6   | S6 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:10 |
| S8  | 46  | ("LED" or "light emitting") and ((P or n) and (Gan or "gallium nitride")) and ((transparent) adj (electrode or conduct \$3)) and (al or aluminum) and p+   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:12 |
| S9  | 830 | ("LED" or "light emitting") and (Ingan or Algan) and ((metal or electrode or conduct \$3) adj (layer)) and ((second) adj (metal or electrode or conduct \$3))  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:15 |
| S10 | 41  | (p+ or n+) and S9  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:16 |
| S11 | 42  | "High concentration" and S9  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:17 |
| S12 | 80  | S10 or S11   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:17 |

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| S13 | 19   | S10 and @ad <<br>"20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:17 |
| S14 | 18   | S11 and @ad <<br>"20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:17 |
| S15 | 2    | "20020096687"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:19 |
| S16 | 17   | "20020096687" or<br>"6420736"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:20 |
| S17 | 1428 | ("LED" or "light<br>emitting") and (gan or<br>"gallium nitride") and<br>((metal or electrode or<br>conduct\$3) adj (layer))<br>and ((second) adj<br>(metal or electrode or<br>conduct\$3)) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:21 |
| S18 | 66   | (p+ or n+ ) and S17  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:21 |
| S19 | 29   | S18 and @ad <<br>"20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>15:21 |
| S20 | 8    | S16 and @ad <<br>"20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>16:00 |
| S21 | 15   | ("5789768"  <br>"6169298"   "6204512"<br>  "6207972"  <br>"6225648"  <br>"6287947").PN. OR<br>("6420736").URPN.  | US-PGPUB;<br>USPAT; USOCR  | OR | ON | 2008/01/05<br>16:21 |

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|-----|------|--|--|----|----|------------------|
| S22 | 4    | ("LED" or "light emitting") and (AlgaN or IngaN) and ((ga or gallium) adj (layer)) and ((metal or conduct \$3 or electrode) adj (layer)) and ((Al or aluminum) adj (layer))    | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 16:32 |
| S23 | 2937 | ("LED" or "light emitting") and (AlgaN or IngaN) and ((ga or gallium) with (layer)) and ((metal or conduct \$3 or electrode) with (layer)) and ((Al or aluminum) with (layer)) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 16:35 |
| S24 | 783  | S23 and S1   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 16:36 |
| S25 | 80   | ("preventive layer" or "protective layer") and S24   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 16:37 |
| S26 | 48   | S25 and @ad < "20021116"   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 16:37 |
| S27 | 0    | ". "   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 16:37 |
| S28 | 5    | ("LED" or "light emitting") and (Gan) and ((ga or gallium) adj (layer)) and ((metal or conduct\$3 or electrode) adj (layer)) and ((Al or aluminum) adj (layer))                | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 16:49 |
| S29 | 400  | ("LED" or "light emitting") and (Gan) and ((metal or conduct \$3 or electrode) adj (layer)) and ((Al or aluminum) adj (layer))   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 16:51 |

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| S30 | 188   | ((second) adj (metal or conduct\$3 or electrode)) and S29  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>16:53 |
| S31 | 99    | ((second) adj ((metal or conduct\$3 or electrode) adj (layer))) and S29  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>16:54 |
| S32 | 48    | S31 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>16:54 |
| S33 | 47370 | ("LED" or "light emitting") and (AlgaN or IngaN) and ((Al or aluminum) with (layer)) ((second) adj ((metal or conduct\$3 or electrode) adj (layer)))     | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>17:11 |
| S34 | 246   | ("LED" or "light emitting") and (AlgaN or IngaN) and ((Al or aluminum) with (layer)) and ((second) adj ((metal or conduct\$3 or electrode) adj (layer))) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>17:11 |
| S35 | 87    | S34 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>17:12 |
| S36 | 9     | "6100174"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>18:04 |
| S37 | 2     | ("LED" or "light emitting") and (metal-Ga) and (Gan adj layer) and Al  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>18:26 |
| S38 | 36884 | ("LED" or "light emitting") and ((gallium or Ga) with (compound or layer)) and (Al or aluminum)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>18:29 |

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|-----|---------|--|--|----|----|---------------------|
| S39 | 49      | ("LED" or "light emitting") and (GaTi or GaTiN) and (Al or aluminum) and Gan | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>18:30 |
| S40 | 1       | S39 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>18:30 |
| S41 | 3       | "2001022367"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>18:51 |
| S42 | 264     | ("LED" or "light emitting") and ((Ga) adj (metal)) and Gan                   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>19:00 |
| S43 | 7       | ("LED" or "light emitting") with ((Ga) adj (metal)) and Gan                  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>19:00 |
| S44 | 0       | S43 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>19:00 |
| S45 | 2       | ((al or aluminum) adj (layer)) and S42                                       | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>19:01 |
| S46 | 253     | (al or aluminum) and S42   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>19:02 |
| S47 | 130     | S46 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>19:02 |
| S48 | 2346499 | KR "22631"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/01/05<br>19:17 |

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| S49 | 416 | ("LED" or "light emitting") and (Gallium nitride or Gallium nitride) and (Aluminum or Aluminum) and (Gallium nitride adj layer)     | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 19:21 |
| S50 | 1   | (third adj (metal or conductor or electrode) adj layer) and S49   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 19:22 |
| S51 | 4   | (second adj (metal or conductor or electrode) adj layer) and S49  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 19:25 |
| S52 | 2   | S51 and @ad < "20021116"  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 19:25 |
| S53 | 299 | ("LED" or "light emitting") and ("Gallium indium" or "gallium titanium") and (Aluminum or Aluminum) and (Gallium nitride adj layer) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 19:29 |
| S54 | 141 | S53 and @ad < "20021116"  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/05 19:29 |
| S55 | 2   | "20070029568"   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/06 18:49 |
| S56 | 3   | "11319488"  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/01/07 10:22 |
| S57 | 34  | ("LED" or "light emitting") and ((P+ or n+) same (Gallium nitride or Gallium nitride)) and Al and (metal\$3 adj layer)              | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/06/25 15:03 |
| S58 | 11  | S57 and @ad < "20021116"  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/06/25 15:07 |

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| S59 | 210    | ("LED" or "light emitting") and ((P+ or n+ ) and (Gan or "gallium nitride")) and Al and (metal\$3 adj layer)   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/06/25 15:52 |
| S60 | 127    | S59 and @ad < "20021116"   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/06/25 15:53 |
| S61 | 122    | light and S60  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/06/25 16:01 |
| S62 | 3      | ("LED" or "light emitting") and (p adj transparent) and ((P+ or n+ ) and (Gan or "gallium nitride")) and (metal\$3 adj layer)  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/06/25 16:39 |
| S63 | 0      | S62 and @ad < "20021116"   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/06/25 16:40 |
| S64 | 598342 | ("LED" or "light emitting") and (p adj transparent) or ("Indium-Tin Oxide" or "ITO") or ("Cadmium-Tin Oxide" or "CTO") or ("Titanium Tungsten Nitride" or "TiWN") and ((P+ or n+ ) and (Gan or "gallium nitride")) and (metal\$3 adj layer) and al   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/06/25 16:43 |
| S65 | 36     | ("LED" or "light emitting") and ((p adj transparent) or ("Indium-Tin Oxide" or "ITO") or ("Cadmium-Tin Oxide" or "CTO") or ("Titanium Tungsten Nitride" or "TiWN")) and ((P+ or n+ ) and (Gan or "gallium nitride")) and (metal\$3 adj layer) and al | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2008/06/25 16:45 |



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| S66 | 14  | S65 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/06/25<br>16:45 |
| S67 | 41  | ("LED" or "light emitting") and ((p adj transparent) or ("Indium-Tin Oxide" or "ITO") or ("Cadmium-Tin Oxide" or "CTO") or ("Titanium Tungsten Nitride" or "TiWN")) and ((P+ or n+) and (Gan or "gallium nitride")) and (metal\$3 adj layer) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/06/25<br>17:10 |
| S68 | 14  | S67 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/06/25<br>17:11 |
| S69 | 121 | ("LED" or "light emitting") and ((p adj transparent) or ("Indium-Tin Oxide" or "ITO") or ("Cadmium-Tin Oxide" or "CTO") or ("Titanium Tungsten Nitride" or "TiWN")) and ((P+ or n+) and (Gan or "gallium nitride"))                          | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/06/26<br>08:45 |
| S70 | 29  | S69 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/06/26<br>08:47 |
| S71 | 89  | ("3409809"   "3790868"   "3849707"   "4283118"   "4316208"   "4408217"   "4495514"   "4855249"   "4911102"   "4946548"   "5122845").PN. OR ("5369289").URPN.   | US-PGPUB;<br>USPAT; USOCR  | OR | ON | 2008/06/26<br>09:12 |
| S72 | 59  | S71 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/06/26<br>09:12 |

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| S73 | 55  | ("LED" or "light emitting") and ((p or n) adj ((transparent) or ("Indium-Tin Oxide" or "ITO") or ("Cadmium-Tin Oxide" or "CTO") or ("Titanium Tungsten Nitride" or "TiWN"))) and (Gan or "gallium nitride"))   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/02<br>14:44 |
| S74 | 17  | S73 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/02<br>14:45 |
| S75 | 55  | ("LED" or "light emitting") and (((p or n) adj ((transparent) or ("Indium-Tin Oxide" or "ITO") or ("Cadmium-Tin Oxide" or "CTO") or ("Titanium Tungsten Nitride" or "TiWN")))) and (Gan or "gallium nitride")) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/02<br>14:48 |
| S76 | 55  | ("LED" or "light emitting") and ((p or n) adj ((transparent) or ("Indium-Tin Oxide" or "ITO") or ("Cadmium-Tin Oxide" or "CTO") or ("Titanium Tungsten Nitride" or "TiWN")))) and (Gan or "gallium nitride"))  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/02<br>14:49 |
| S77 | 17  | S76 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/02<br>14:49 |
| S78 | 556 | ("LED" or "light emitting") and ((p or n) adj ((transparent) or ("Indium-Tin Oxide" or "ITO") or ("Cadmium-Tin Oxide" or "CTO") or ("Titanium Tungsten Nitride" or "TiWN"))))                                  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/02<br>14:50 |
| S79 | 55  | S78 and (Gan or "gallium nitride")   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/02<br>14:51 |

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| S80 | 17   | S79 and @ad <<br>"20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/02<br>14:51 |
| S81 | 1982 | ("LED" or "light<br>emitting") with (NP or<br>NPN)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/02<br>15:51 |
| S82 | 1    | "11463499"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2008/07/08<br>09:34 |
| S83 | 0    | ("LED" or "light<br>emitting") and ((P or n)<br>adj (+) and (Gan or<br>"gallium nitride")) and<br>((transparent) adj<br>(electrode or conduct<br>\$3)) and ((Ga or<br>gallium) adj (layer))<br>and (al or aluminum)<br>and (Au or gold) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>11:52 |
| S84 | 2887 | ("LED" or "light<br>emitting") and p+   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>12:01 |
| S85 | 2    | ("LED" or "light<br>emitting") and ((P+ or n<br>+) adj (Gan or "gallium<br>nitride")) and ((P- or<br>n-) adj (Gan or<br>"gallium nitride")) and<br>algan and (second adj<br>metal)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>12:03 |
| S86 | 2    | ("LED" or "light<br>emitting") and ((P+ or n<br>+) adj (Gan or "gallium<br>nitride")) and ((P- or<br>n-) adj (Gan or<br>"gallium nitride")) and<br>algan and (al adj layer)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>12:04 |
| S87 | 1    | ("LED" or "light<br>emitting") and ((P+ or n<br>+) adj (Gan or "gallium<br>nitride")) and algan<br>and (al adj layer) and<br>(gan adj substrate)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>12:07 |

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|-----|-----|--|--|----|----|------------------|
| S88 | 5   | ("LED" or "light emitting") and ((P+ or n +) adj (Gan or "gallium nitride")) and algan and (gan adj substrate) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 12:08 |
| S89 | 507 | ("LED" or "light emitting") and ((P or n) adj (Gan or "gallium nitride")) and algan and (gan adj substrate)    | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 12:09 |
| S90 | 0   | (high adj concentration adj gan) and S89   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 12:13 |
| S91 | 6   | (high adj concentration adj gan)   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 12:13 |
| S92 | 163 | ((P+ or n+) adj (Gan or "gallium nitride"))  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 12:20 |
| S93 | 122 | algan and S92  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 12:21 |
| S94 | 65  | S93 and @ad < "20021116"   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 12:21 |
| S95 | 98  | S92 not S94  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 13:13 |
| S96 | 22  | S95 and @ad < "20021116"   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 13:13 |
| S97 | 8   | ((gallium adj electrode) or (gallium adj metal) or (gati)) and S89   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/05/13 13:46 |

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| S98  | 3    | S97 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>13:46 |
| S99  | 26   | ((gallium adj electrode)<br>or (gallium adj metal)<br>or (gati)) and (P or n)<br>adj (Gan or "gallium<br>nitride") | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>13:58 |
| S100 | 7    | S99 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>13:58 |
| S101 | 0    | ("gati" or "Gatin") and<br>((p+ or n+) adj gan)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:02 |
| S102 | 113  | ("gati" or "Gatin") and<br>gan   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:04 |
| S103 | 2    | S102 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:04 |
| S104 | 5668 | ("gati" or Gatin or gaal<br>or gasn or gaau or<br>gacu or gaad or gain or<br>gacr or gafe) and gan                 | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:10 |
| S105 | 2201 | ("LED" or "light<br>emitting") and S104  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:10 |
| S106 | 678  | S105 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:11 |
| S107 | 3    | ((p+ or n+) adj gan)<br>and S106   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:11 |

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| S108 | 5668   | ("gati" or "Gatin" or "gaal" or "gasn" or "gaau" or "gacu" or "gaad" or "gain" or "gacr" or "gafe") and "gan"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:14 |
| S109 | 761864 | ("gati" or "Gatin" or "gaal" or "gasn" or "gaau" or "gacu" or "gaad" or "gain" or "gacr" or "gafe")  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:15 |
| S110 | 209    | ("gati" or "Gatin" or "gaal" or "gafe") and Gan  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:15 |
| S111 | 32     | S110 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:15 |
| S112 | 0      | ((p+ or n+) adj (gan)) and S111  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>14:18 |
| S113 | 499    | Gan and ("Gallium barrier" or "gallium metal" or "gati" or "gatin" or "gaal" or "gallium alloy" or "gallium compound") and (aluminum barrier or aluminum electrode or aluminum layer or aluminum alloy or aluminum compound) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>15:30 |
| S114 | 143    | S113 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>15:31 |
| S115 | 22     | ((gan adj base) or (gan adj substrate)) and algan and ((p+ or n+) adj gan)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>16:44 |
| S116 | 4      | S115 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>16:44 |

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| S117 | 2260 | ((gan adj base) or (gan adj substrate)) and algan   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>16:49 |
| S118 | 52   | ((gan adj base) or (gan adj substrate)) and algan and (p+ or n+)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>16:50 |
| S119 | 12   | S118 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>16:50 |
| S120 | 1    | ("Gallium barrier" or "gallium metal" or "gati" or "gatin" or "gaal" or "gallium alloy" or "gallium compound") and S119                     | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>16:53 |
| S121 | 0    | ((gan adj base) or (gan adj substrate)) and (((p + or n+) adj gan) or ("high concentration" adj Gan)) and (Gaal or Gati or Gatin)           | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>18:31 |
| S122 | 29   | ((gan adj base) or (gan adj substrate)) and (((p + or n+) adj gan) or ("high concentration" adj Gan))                                       | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>18:31 |
| S123 | 6    | S122 and @ad < "20021116"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>18:31 |
| S124 | 2    | "20050230688"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/13<br>18:40 |
| S125 | 31   | ((gan adj base) or (gan adj substrate) or (gallium adj nitride adj substrate)) and (((p+ or n+) adj gan) or ("high concentration" adj Gan)) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>09:29 |

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| S126 | 8     | S125 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>09:29 |
| S127 | 635   | ((gan adj base) or (gan adj substrate) or (gallium adj nitride adj substrate)) and (((p or n) adj gan) or ("high concentration" adj Gan)) and algan and (electrode or conduct\$3 or metal) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>10:23 |
| S128 | 210   | S127 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>10:23 |
| S129 | 2     | "20030107053"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>16:49 |
| S130 | 22756 | ("LED" or "light emitting") and "Orga" or "vga" or "wga"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>16:56 |
| S131 | 27    | ("LED" or "light emitting") and (metal or conductor) with ("Orga" or "vga" or "wga")   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>16:57 |
| S132 | 10    | S131 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>16:57 |
| S133 | 0     | ("LED" or "light emitting") and (metal or conductor) with ("Organ" or "vgan" or "wgan")  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>17:27 |
| S134 | 142   | ("LED" or "light emitting") and (metal or conduct\$3 or electrode) with ("Orga" or "vga" or "wga")   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>17:28 |



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| S135 | 50   | S134 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>17:28 |
| S136 | 42   | (metal or conduct\$3 or electrode) with ("Crga" or "wga")  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>17:52 |
| S137 | 12   | S136 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>17:53 |
| S138 | 964  | (metal or conduct\$3 or electrode) with ("nial" or "ptal" or "pdal")   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>17:58 |
| S139 | 156  | ("LED" or "light emitting") and S138   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/14<br>17:58 |
| S140 | 0    | "11695759"   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/05/15<br>11:02 |
| S141 | 1505 | ("LED" or "light emitting") same (Algan) same (metal or electrode or conduct \$3)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>13:50 |
| S142 | 500  | S141 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>13:51 |
| S143 | 4298 | ("LED" or "light emitting") same ((layer) with (Al or aluminum)) and GaN   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>14:28 |
| S144 | 248  | ("LED" or "light emitting") same ((layer) with ((Al or aluminum) adj (compound or alloy or electrode or conduct\$3 or metal))) and GaN | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>14:30 |

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| S145 | 88   | S144 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>14:31 |
| S146 | 1550 | ("LED" or "light emitting") same ((layer) with ((Al or aluminum) adj (compound or alloy or electrode or conduct\$3 or metal))) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>14:54 |
| S147 | 577  | S146 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>14:54 |
| S148 | 577  | S147 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>14:57 |
| S149 | 489  | S148 not S145  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>15:01 |
| S150 | 50   | "5929466"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>15:46 |
| S151 | 3    | ("LED" or "light emitting") same (alingan) same (transparent adj layer)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>16:05 |
| S152 | 2    | S151 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>16:05 |
| S153 | 58   | ("LED" or "light emitting") same (alingan) and (transparent adj layer)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>16:06 |
| S154 | 6    | S153 and @ad < "20021116"  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/04<br>16:06 |

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| S155 | 3  | (crga or vga or wga)<br>with gan                    | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/18<br>11:01 |
| S156 | 8  | (nial or ptal or pdal)<br>with gan                  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/18<br>11:02 |
| S157 | 1  | S155 and @ad <<br>"20021116"                        | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/18<br>11:03 |
| S158 | 4  | S156 and @ad <<br>"20021116"                        | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/18<br>11:03 |
| S159 | 24 | (transparent aj<br>electrode) same (n+<br>adj gan)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/18<br>11:06 |
| S160 | 1  | (transparent adj<br>electrode) same (n+<br>adj gan) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB | OR | ON | 2009/12/18<br>11:06 |

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